DOCUMENT RESUME

ED 301 463 SE 050 185

AUTHOR Boyd, Vivian; And Others
TITLE Math Refresher Workshop Series as an Aid to Registrants of a College Level Math Course.
INSTITUTION Maryland Univ., College Park. Counseling Center.
REPORT NO UM-RR-11-88
PUB DATE 88
NOTE 11p.; May not reproduce well.
AVAILABLE FROM University of Maryland, University Counseling Center, Shoemaker Building, College Park, MD 20742.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Algebra; *College Mathematics; Higher Education; *Mathematics Instruction; Remedial Instruction; *Remedial Mathematics; School Holding Power; *Student Characteristics; *Workshops

ABSTRACT

Because the failure rate for Math 110 (a college algebra course for non-science/technology-oriented majors at the University of Maryland) was so high, it was decided to offer selected registrants the opportunity to take a free refresher workshop series to improve their mathematics skills before they took the course. In summer 1985, 809 students who were registered to take Math 110 during the fall semester and whose permanent address indicated residence in Maryland, northern Virginia or Washington, D.C., were sent a letter of endorsement for the workshop series, which included a brochure suggesting the student call to schedule a visit. Fifty-eight of those contacted attended at least one of the workshops. This experience had a significant and enduring effect on subsequent reenrollment. Students having the workshops had significantly higher persistence rates for three semesters after the intervention than students not having the workshops. The participation rate (7%) may indicate a need for a more effective marketing approach and/or that the end of the summer is not an ideal time for such an intervention to be offered. (Author/MNS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED301463

COUNSELING CENTER

Office of Vice Chancellor for Student Affairs

UNIVERSITY OF MARYLAND

College Park, Maryland

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

N. E. Bedard

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Math Refresher Workshop Series

As an Aid to Registrants of a College Math Course

Research Report # 11-88

The Counseling Center Retention Study Group*

* Vivian Boyd, Steven Carstens, Patricia Hunt

Stanley Hunt, Brian McLaren, Thomas Magoon

HE 150 185

COUNSELING CENTER
UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

Math Refresher Workshop Series

As an Aid to Registrants of a College Math Course

Research Report # 11-88

The Counseling Center Retention Study Group*

* Vivian Boyd, Steven Carstens, Patricia Hunt

Stanley Hunt, Brian McLaren, Thomas Magoon

Computer time for this project has been provided in full through the Computer Science Center of the University of Maryland

BEST COPY AVAILABLE

Math Refresher Workshop Series

as an Aid to Registrants of a College Level Math Course

The Counseling Center Retention Study Group*

The University of Maryland College Park

Research Report # 11-88

Summary

During the summer of 1985, 58 students who had local addresses and who were registered for Math 110, a college level math course participated in a refresher workshop series designed to improve both their understanding of math and their math study skills in preparation for the college algebra course for which they were registered. Offering a high calibre college math refresher workshop series to registrants of college algebra in advance of the semester in which they are registered to take the course has a significant and enduring effect on subsequent reenrollment. Students in the treatment group had statistically significantly higher persistence rates than students in the nontreatment group, for three semesters after the semester of intervention. In addition, the treatment group had less academic action taken against them than the nontreatment group, although these differences were not statistically significant. The participation rate (7%) may indicate a need for a more effective marketing approach and/ that the end of the summer is not an ideal time for such an intervention to be offered.

* Vivian Boyd, Steven Carstens, Patricia Hunt, Stanley Hunt, Brian McLaren, Thomas Magoon

BEST COPY AVAILABLE

MATH REFRESHER WORKSHOP SERIES AS AN AID TO REGISTRANTS OF A COLLEGE MATH COURSE

The Retention Study Group*
Counseling Center, University of Maryland

At The University of Maryland College Park all students must demonstrate college level math competence by the time they have earned 60 credits. Most students demonstrate this competence by successfully completing either Math 115 (for science/technology-oriented majors) or Math 110 (for non-science/technology-oriented majors). Students often face this requirement with inadequate basic math skills and study habits and with a high level of anxiety. Withdrawal and failure rates, as one would expect, are high. For example, the failure rate for Math 110 in 1982-1983 was three times higher than the UMCP lower divisional course average (Office of Institutional Studies, 1983). These University general education requirements have intensified concerns regarding the role of math courses in student attrition from higher education. Consequently, it was decided to offer selected college algebra (Math 110) registrants the opportunity to take during the summer a free refresher workshop series to improve their math skills in preparation for the Fall 1985 semester in which they were registered for Math 110.

* Vivian Boyd, Steven Carstens, Patricia Hunt, Stanley Hunt, Brian McLaren, Thomas Magoon.

BEST COPY AVAILABLE

METHOD

Subjects and Procedures

During the summer of 1985, a list was obtained from University records of the names of students who were registered to take Math 110 during the fall semester and whose permanent address indicated residence in Maryland, northern Virginia or Washington, D.C. (n = 861). A nontreatment control group was created by randomly selecting 52 names from this list. The remaining 809 students were sent a letter of endorsement for the workshop series, signed by a member of the Math Department. A brochure describing the workshop and ways it might help students was included. The brochure suggested that the student call the Learning Assistance Service to schedule a visit.

The program had affective, behavioral, and cognitive components. The affective component consisted of handouts on coping with math anxiety. The behavioral component consisted of math study hints. The cognitive component was comprised of a highly recommended refresher workshop series which uses workbooks and videocassettes in connection with the text Intermediate Algebra (McKeague, 1982). Taken together, these materials offer students a strong and thorough preparation for Math 110.

At the initial visit, students completed a pre-test to determine which components of the Math 110 Refresher Workshop would be appropriate for them. They also filled out an intake form and a folder upon which to record progress made during subsequent visits. Refresher workshops were available for

BEST COPY AVAILABLE

approximately four weeks, through the second week of fall classes.

Outcome Variables

Two outcome variables were studied to determine the effect of the intervention on subject retention rates:

(1) academic persistence, defined as registered for a given semester;

(2) persistence in good standing, defined as registered for a given semester, and with no academic action taken as a result of the previous semester.

In addition, the final course grade for Math 110 was examined for the treatment and nontreatment groups.

All data concerning Math 110 course registration, Math 110 final grade, registration status, and academic action were obtained from University records.

RESULTS

Fifty-eight (7%) of the Math 110 registrants contacted by mail went to the Learning Assistance Service for at least one session of the Refresher Workshop series. Of those, 7 students (12%) reported on their intake sheet that they had taken Math 001, a non-credit preparatory math course. Ten students (17%) reported that they had taken Math 110 previously. Over half (52%) reported that they experienced tension in math courses in general.

There were no statistically significant differences between the treatment and the nontreatment control group in terms of final grade in Math 110 in the Fall of 1985, despite the large number of students in the nontreatment group who withdrew from

BEST COPY AVAILABLE

the course (see Table 1).

Table 1.

Final Math 110 Grade by Group

	Group			
	Treatment (n=58)		Nontreatment (n=52)	
Final Grade	n	%	n	%
A	3	5	5	10
B	7	12	5	10
C	21	36	11	21
D	8	14	5	10
F	9	16	8	15
W	10	17	18	35

For Fall 1985, the semester during which the students involved in this intevention were enrolled in Math 110, all of the students in the experimental group remained enrolled at UMCP; 4 of the students in the nontreatment group withdrew from the University. Table 2 shows academic persistence rates for the treatment and nontreatment groups for four semesters after the semester of intervention. For three semesters follcwing the semester of intervention, the academic persistence rates for the treatment group were significantly higher then for the nontreatment group.

BEST COPY AVAILABLE

Table 2.

Academic Persistence Rates by Group

	Group				
	Experimental (n=58)		Nontreatment (n=52)		
Semester	n	%	n	%	p
Spring '86	55	95	42	81	.05
Fall '86	50	86	32	62	.005
Spring '87	42	72	28	54	.06
Fall '87	36	62	27	52	ns

To determine if what students learned during the retention intervention (e.g., study skills, relaxation) generalized to other courses and hence to academic performance, rates for the two groups were examined on the variable 'persisted in good standing'. Table 3 shows the differences on that variable for the two groups.

Table 3.

Rates of 'Persisted in Good Standing' by Group

	Group				
	Experimental		Nontreatment		
Semester	n	%	n	%	p
Spring '86	45	82	30	71	ns
Fall '86	41	82	23	72	ns
Spring '87	38	91	27	96	ns
Fall '87	34	94	23	85	ns

While the differences are not significant according to the chi square statistic, they are in the expected direction for the first year following the intervention.

BEST COPY AVAILABLE

DISCUSSION

Offering a high calibre college math refresher workshop series to registrants of college algebra in advance of the semester for which they are registered to take the course has a significant and enduring impact on academic persistence. It has nonsignificant impact on persistence in good standing, defined as registered for and completed a particular semester and with no academic action taken as a result of that semester, although the trends are in the expected direction,

Given the role of Math 110 as a gate-keeping course - i.e. students must complete the requirement or leave the system - it is encouraging that students who listened to at least one of the refresher tapes were significantly more likely to re-enroll at UMCP than students in the uncontacted group, even though there seemed to be no differences between the two groups in final Math 110 grade.

The participation rate of 7% was disappointingly low, indicating perhaps the need for an enhanced marketing approach, perhaps by following up the letter with a personalized phone call. A descriptive brochure accompanied by a letter of endorsement from the Math Department were not sufficient to encourage students about to take a college algebra course (designed for non-science/non-technology oriented majors) to make the effort required to participate in the refresher workshop. Moreover, it also may be that a summertime intervention is not a conducive time for students to seek academic skill building from the Learning Assistance Service at the University.

BEST COPY AVAILABLE

To investigate these questions a similar program with an enhanced marketing approach should be offered, during winter break to students enrolled in Math 110 for the spring semester, and at the end of the summer break, to students enrolled in Math 110 for the fall semester.

References

McKeague, C. P. (1982). Intermediate Algebra. Orlando, Florida: Academic Press, Inc.

BEST COPY AVAILABLE